

As to *Haplopappus denovyrus* and *Ericameria* there are no positive char. so far as I can find to separate them from each other or from *Pteronia*, *Nardophyllum* and *Lepidophyllum*. *Haplopappus* has generally broad more solitary capitula whilst in *denovyrus* and *Ericameria* they are narrow and corymbose or shortly paniculate ~~the one~~ homogamous in the one radiate ^{the other}. The radiate *denovyrus* is only an accidental aberration not common in the species and like the rayless varieties of *Pteris amellus* does not invalidate the genus.

I have now been for weeks at *Helianthemum* in which a precious mess has been made by various writers and by now - more than by Ch. Dip. Although I cannot go with him in entirely neglecting the presence or absence of a style in the ray flowers I cannot make that a subtribe or character but sometimes generic sometimes perhaps only sectional. *Halimolobos laevifolia* and *Linum* make up a little group of their selves remarkable for the persistent sepals or subtending laminae of the ray flowers and *Leptocarpus* are nearly allied but ~~the latter~~ ^{to each other} *Labazia*, *Zaluzania* (including *Ferdinandia* and *Chilophyllum*) and *Gymnadenium* (including *Helionema*) are very near to one another but I cannot follow Ch. Dip. whose paper on *Zaluzania* in *Flora of Jamaica* out would unite them all under *Zaluzania*. ~~Altho~~ must I think go into *Sclerocarpus* - indeed *Gymnadenium univerticillatum* can only be distinguished from *Sclerocarpus apocynifolius* by slight specific differences
Leptocarpus includes *Drepania*

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My dear Gray

To answer in the first place your two *Salvia* queries. The *Salvia angustifolia* Cav. varies much as to hairiness Cavanilles' and Lindley's figures represent it as very hairy Jacquin as glabrous. Our wild specimens which are numerous are most of them glabrous or the stems spiculate with a few hairs besides those at the nodes but some are nearly and others quite as hairy as represented by Cavanilles and Lindley so that I conclude them all to be one species common in the Mexicano-Spanish region varying as to hairiness and also as to the leaves usually very narrow and entire but sometimes especially under cultivation a few becoming broader and toothed. We have no specimen of my *S. leptophylla* which I suspect is a variety of *S. lanceolata* - Wright is certainly *S. angustifolia* or *S. reptans* Jacq.

The garden plant of which fragments just received seems to be notwithstanding its shorter corolla a form of *S. tubifera* Cav. which it agrees with in every other respect. We have certainly no nearer match to it.

As to Compositae I am very much obliged for your notes and should be very thankful for more - the worst is I have very little time to write any details for you to remark upon. I shall go over several Asteroids again and think that notwithstanding Harvey I must keep out the small shrubby & other species & Agathoceras from either as their pappus very much interferes with the generic character - the worst is there are intervening species but those we have every where. I am better satisfied with Mulvoidae of which I make ten subtribes

- * Fl. ♀ dum adriat. ~~multicaulis~~ v. ~~rarius~~ irregularis
- 1. Tarachonantheae. Capitula dioica. Inv. bractea nuda v. biparva (All. P. Apocina or Marasmi)
- 2. Pluekeinae. Capitula androgyna. Inv. bractea nuda v. herbacea
- 3. Felagineae. Capitula androgyna fl. ♀ prevalentibus paleis receptaculo subtensi v. involuti. ~~Inv.~~
- 4. Gnaphalinea. Capitula androgyna fl. ♀ prevalentibus ^{v. dioica} receptaculo nudo. Inv. bractea scariosa
- 5. Helichrysa. Capitula androgyna fl. ♀ prevalentibus v. homogama, non glomerata
- 6. Ingeanthae. Capitula homogama in glomerulo capituliformi aggregata
- old world * Fl. ♀ dum adriat. digitata v. rarius irregularis (All)
- 7. Heliantheae. Capitula aggregata v. distincta. Folia parva v. torta supra nec subtus concava v. incava (All. P. Apocina)
- 8. Athroisae. Capitula distincta. Folia normalia. Recept. nudum. Hyli rami truncati
- 9. Eucnuleae. Capitula distincta. Folia normalia. Recept. nudum. Hyli rami apice rotundati.
- 10. Gnaphalinea. Capitula distincta. Folia normalia. Recept. paleaceum. Hyli rami apice rotundati v. truncati.

There are of course necessary characters by contrast and always as every where else some exceptions to the supposed constant characters but upon the whole the genera do better than the Asteroidae

The following are the short characters for the Felagineae

- * Spuria Achaenis Louisa latiora v. G. angulatis v. G. costatis
- anum Gerontogon
- Genera Cylindroclini Orlypharinetum et Athroisina
- ** Genuina Achaenis parvis costatis herbis Gnaphalocera
- Evag Fl. ♀ G. sericatis receptaculi paleis imbricatis subtensi
- ♀ nudi v. serie unica palearum circumdati. Pappus 0

Pitocropha. Fl. ♀ multiseriatis in receptaculo depressa. G. non paleis cymbiformibus acete inclusi, ♀ nudi Pappus 0.

Microspis. Fl. ♀ uni. v. pauci. sericatis in receptaculo cylindrico v. elongati paleis cymbiformibus acete inclusi, ♀ nudi v. paleis planis subtensi. Pappus 0 v. hinc inde e setis per paucis fuscibus

subgenera plerumque monotypica 1. Bombaculocera Fl. ♀ v. sericatis receptaculo paleis non echinatis inclusi, ♀ nudi; 2. Anantholocera Fl. ♀ v. sericatis resiliis paleis echinatis. lanatis inclusi ^{Gnaphalocera} ^{Sp. Neff} ^{Notes IV. 260. p. 460} Fl. ♀ v. sericatis paleis non echinatis inclusi ♀ paleis angustis subtensi. 3. Phyllocera Fl. ♀ G. sericatis paleis non echinatis inclusi ♀ cum paleis paucis intermixtis ♀ staminibus carphos A Gray. Char. Dipterygibus v. paleis inter. uncinatis. cuspidatis.

Diaperia Flores ♀ G. sericatis paleis concavis subtensi. ♀ paleis involuti v. subtensi. Pappus 0

Microspis Flores ♀ 1. 2. sericatis paleis concavis subtensi ♀ paleis involuti. Pappus coroniformis. Hlozo Fl. ♀ G. sericatis exterioribus v. omnes paleis subtensi v. subinvoluti. Pappus setosus ♀ nudi. Pappus fl. ♀ v. omnium setosus Hlozo (Trichospora) Fl. ♀ G. sericatis paleis hylis subtensi ♀ nudi Pappus fl. ♀ e setis plurimis, fl. ♀ 0.

but then there are Madia and others
which I have not yet begun upon - In all
the above genera except a few such as
Helianthus, Pecten & Galanthus I have had
to work up almost every species and to examine
^{often} a great many specimens of one - fortunately
cold water does to soften the flowers

I perceive I have taken two sheets of
paper for one and must now conclude
I have not patience to read over what I
have said so you must allow for slip of
the pen

Ever your sincerely
George Dontham

Do Madia

I do not like the breaking up of Rudbeckia
some species left in Rudbeckia seem to be nearer
to Dracopis and others to Echinacea and Pheliponia
than they are to each other. Echinacea heterophylla
Don has not the receptacles pale of Echinacea
and is very near Rudbeckia californica. I think
the whole together make one very good natural
genus dividible into 5 if not 6 sections.

Dalmanothya, Willdenowia, ~~and~~ Miranolia (Lk.)
Dip. (Lithonia saberrima Deuth and L. calva Lk. Dip.)
and Dorrickia must I think remain unattached

In Dalmanilla I should include Phlogopne
the true D. Zeyheri & D. Mexicana are perhaps not different
from the typical D. thomboides. The plants I thought
were D.'s species of those names when I did the Flora
Niger are very different and true Coronocarpus

Of Wedelia (including with some hesitation Wolstenholmeia)
I have examined nearly 40 species besides several of
Hook. and Don & others which belong to other genera

Coronocarpus (which is Wedelia with neutral
ray flowers) comprises about 30 species African
and American including Anomorphium D. (except
cf. Diphthalmoides which is a Wedelia) and a considerable
number of Gardner's Negivers. The scale at the base
of the achene which Lk. Dip. makes such a fuss
about occurs in several sp. of Wedelia ^{Leprieuxia} ~~Leprieuxia~~
and others

Ogiera (Keckia Lk. Dip.) only differs from
Coronocarpus in the habit small heads with
the rays wanting or very minute. Gynoxis
microcephala Gardn. is nothing but the common
Ogiera.

I leave *Lipochorda* as you have settled it

Zeemania with near 30 species differing from *Wedelia* & *Blainvillia* in the more or less winged cymes should I think include as a section *Saccanthera* DC. under which I should enumerate amongst others your *Perbeina monocephala*, *V. aurea* DC. *Tithonia ovata* Benth. etc.

Oxydoea with about 22 species in *Zeemania* with neutral ray fl. It includes a few of Gardner's and my *Nigieray* and one of Gardner's *Perbeas* - the other is a *Nigiera*)

Wyethia and *Tithonia* remain untroubled except that the latter must be limited to *T. longiflora* and *T. tubiformis* - unless DeRondeletia 1865 be a third sp. & possibly *Thurberi* n. sp. a fourth. (including *lykia* and some *Harpalia*)

Nigiera with between 50 & 60 sp. is but very little different in char. from *Tithonia* - from the Cuban specimens supposed to be H. B. K.'s original species (determined by Ziesbach) the common *sepan* one must be the same

To *Helianthus* besides your N. American herbaceous species I think we cannot help referring some half dozen Andine shrubby species

of *Dorymenium* we have I believe 10 sp. Mexican and Peruvian

To *Helianthera* I am much disposed to add the African *Lipotrache* with ♀ rays and the *Drankos*, *Echinocephalus*, and Abyssinian *Micromischnites* with neuter rays the whole make a little genus of

about 8 species very natural and fairly characterized.

Encelia as I think you have pretty well shown makes a very good genus if it includes as sections *Doraltia* *Grœva* and *Linna*.

Salmea Helianthella and *Actinomeris* must I think all remain, as near to but distinct from *Perbeina*. I should divide the latter into four distinct sections *Evesberina* *Hamulium* *Stalypteria* and *Ximeneria*

Podachnium Brevis (*Normophyllum* Ch. Bep.) must stand good as well as *Epilautus*

All the above will I think go into a subtribe *Perbeina* - the following into *Coreopidea*

Guizotia (including *Neluzia*) *Cynedrella* and *Microlance* all little distinct genera have the invol. of *Perbeina* with the achenes dorsally flattened of *Coreopidea*

Coreopsis besides the genera you have referred to it must comprise *Destinaria* which is not even sectionally distinct from *Agavesta*

Dahlia which Ch. Bep. unites with *Coreopsis* though allied to it is as good a genus as most others

I find but little to add in *Heliospermum* *Connos* *Dides* *Glonogyne* (all downward for? *bractea*; *Gardn* is an *Frontina*) *Frulligma* *Chrysanthemum* *Heterospermum* *Glonocardia*

This is as far as I have gone except some genera about which I have not yet made up my mind and I have not formed yet any general scheme for the division of *Helianthera* in which I now see at least five groups *Maloupidium* *Perbeina* *Coreopidea* *Tagetium* and *Helianthera*